

Amendments to the Claims:

The listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Cancel claims 1-41 and 77-92.

42. (Currently Amended) A process for producing at least one continuous grating structure formed as a line grating with distances of between 100 nm and 2500 nm between consecutive grating lines on a surface portion of a substrate, by covering the surface portion with a photoresist layer, bringing the surface portion into a near field of a phase mask having a grating structure, with the photoresist layer facing said mask, exposing the phase mask at an angle which departs from the ~~Littrow~~ Littrow angle (θ_L) or from 0° by no more than 10° , ~~preferably by no more than 5° ,~~ developing the photoresist layer and subjecting the surface portion to an etch process to produce the grating structure, removing the photoresist layer, wherein the phase mask has a transparent region with a diffraction grating and to with portions of the diffraction grating masked and said phase mask is structured in advance by photolithography with the two-beam interference method or is derived from a master copy structured in this manner.

43. (Currently Amended) The process according to Claim 42,
wherein the extension of ~~the at least one~~ grating structure is at least 0.5
cm, ~~preferably at least 1 cm parallel to the lines.~~
44. (Original) The process according to Claim 42,
wherein the surface area of the at least one grating structure on the phase
mask is at least 10 cm².
45. (Original) The process according to Claim 42,
wherein the exposure of the photoresist layer is to a mercury-vapour lamp.
46. (Original) The process according to Claim 42,
wherein the exposure of the photoresist layer is to an excimer laser or
argon laser.
47. (Currently Amended) The process according to Claim 42,
wherein the phase mask comprises ~~atransparent~~ a transparent substrate
and a layer interrupted in a structured way optically inactivating the grating
structure.
48. (Currently Amended) The process according to Claim 47,
wherein the interrupted layer consists of a nontransparent material,
~~particularly metal, and preferably is a chromium layer.~~
49. (Original) The process according to Claim 48,
wherein the substrate is a quartz substrate.
50. (Original) The process according to Claim 42,
wherein the side of the phase mask facing the photoresist layer is covered
by an antireflection layer.

51. (Original) The process according to Claim 42,
wherein during the exposure of the photoresist layer, the photoresist layer
is in vacuum contact with the phase mask.

52. (Original) The process according to Claim 42,
wherein the thickness of the photoresist layer is at most 200 nm.

53. (Original) The process according to Claim 42,
wherein the photoresist layer prior to exposure is covered by a reflection-
reducing layer.

54. (Original) The process according to Claim 42,
wherein during the exposure of the photoresist layer, the distance between
this layer and the phase mask is between 2 μ m and 100 μ m.

55. (Currently Amended) The process according to Claim 42,
wherein the etch process is reactive ion etching, ~~preferably with a gas~~
~~containing at least one of the following components: Ar, CHClF₂, CHF₃.~~

56. (Original) The process according to Claim 42,
wherein the material of the substrate essentially is quartz, silicon,
thermally oxidised silicon, germanium, silicon-germanium, a III-V compound
semiconductor, or lithium niobate.

57. (Original) The process according to Claim 42,
wherein at least one transparent layer having a refractive index different
from that of the substrate is applied to the surface portion after applying the
grating structure.

58. (Original) The process according to Claim 57,
wherein the grating structure and the transparent layer are formed in
such a way that the coupling angle (θ) changes by at most 0.1_/cm along the line
and the absolute value of deviation of the coupling angle(θ) from a target value
does not exceed 0.5°.

59. (Original) The process according to Claim 57,
wherein the transparent layer is applied by reactive DC magnetron
sputtering, in particular pulsed DC sputtering or AC-superimposed DC
sputtering.

60. (Original) The process according to Claim 57,
wherein the thickness of the transparent layer is between 50 nm and 5000
nm.

61. (Currently Amended) The process according to Claim 57,
wherein the material of the transparent layer is Ta₂O₅, Nb₂O₅, TiO₂, ZrO₂,
Al₂O₃, SiO₂-TiO₂, HfO₂, Y₂O₃, SiO_xN_y, Si₃N₄, ~~HfO₂, N_y~~ HfO_xN_y, Al₁₀N_y, TiO_xN_y,
MgF₂ or CaF₂.

62. (Original) Optical element, produced by the process according to
Claim 42.

63-76 (Canceled)

93. (New) The process according to Claim 42, wherein said angle
deports by no more than 5°.

94. (New) The process according to Claim 43, wherein the at least one
grating structure is at least 1 cm parallel to the line.

95. (New) The process according to Claim 48, wherein the layer is metal.

96. (New) The process according to Claim 95, wherein the metal is chromium.

97. (New) The process according to Claim 55, wherein the reactive ion etching is with a gas containing at least one of Ar , CHClF_2 , CHF_3 .